11:15

A COMPARATIVE STUDY OF DIRECT CURRENT AND RADIOFREQUENCY ATRIAL ENDOCARDIAL ABLATION OF ACCESSORY PATHWAYS

John Swartz, Cynthia Tracy, Ross Fletcher, Lawrence Weston, Marc Wish, Pamela Karasik, Alan Soloman, Uniformed Services University, Bethesda, MD and VA Medical Center, Washington, D.C.

The purpose of this study was to compare the safety and efficacy of direct current (DC) and radiofrequency (RF) accessory pathway (AP) ablation. Thirty-three pts with 36 AP underwent endocardial ablation at the atrial insertion using DC (20 pts, 21 AP) or RF (13 pts, 15 AP) energy. Initial success rates were 67% (DC) and 86% (RF), p<0.05. Ultimate success was achieved in 86% (DC) and 93% (RF), p = NS, of pts. Total energy used was 550±257 J (DC) vs 812±174 J (RF), p<0.05. Myocardial enzyme release was noted following 17 of 18 successful DC ablations but in only 2 of 14 RF ablations, p < 0.001. Significant complications occurred in 5/20 DC pts (complete AV block 1 pt, perforation 2 pts, coronary spasm 2 pts) and 0/13 RF pts, p < 0.05. Ablation in septal locations resulted in complete heart block in 3/7 DC (25-45 minutes 2 pts, permanent 1 pt) but in 0/8 RF pts, p < 0.05. We conclude that: 1) RF atrial endocardial AP ablation is more efficacious and significantly safer than DC, 2) RF ablation produces less myocardial destruction than DC and 3) RF is preferable for septal AP ablation due to the risk of heart block associated with DC.

11:30

CATHETER ABLATION OF ACCESSORY PATHWAYS USING RADIOFREQUENCY ENERGY: IMPROVEMENT OF RESULTS WITH THE USE OF A LARGE TIP ELECTRODE CATHETER

Martin Borggrefe, Christine Hief, Ulrich Karbenn, Antonio Martinez-Rubio, Wilhelm Haverkamp, Gerd Hindricks, Günter Breithardt; Westf. Wilhelms-University of Münster, FRG, Department of Cardiology and Angiology

Since 1986 23 pts with WPW syndrome underwent radiofrequency (RF) energy transcatheter ablation of accessory pathways (AP). Standard electrode catheters (USCI 6 F, 8 F; Cordis 7 F with 2 mm tip electrodes) were used in 15 pts (group I), whereas an electrode catheter with a large tip (Mansfield 7 F, tip electrode 4 mm) was used in 8 pts (group II). The AP's were localized at the right free wall in 8 pts, posteroseptal region in 8 pts and left free wall in 7 pts. All pts underwent RF ablation because of drug-refractory circus movement tachycardias. After RF energy applications the AP was interrupted in 4/15 pts (27 %) and modified in 3/15 pts (overall success rate 47 %) in group I pts, whereas the AP was interrupted in 5/8 pts (63 %) and modified in another pt of group II (overall success rate 75 %, p < .01). No anaethesia was required in all but 1 pt. No complications were noted. During follow-up of 22±16 months these results were maintained in the 7/15 group I pts and in 6/8 group II pts (mean follow-up 3 months).
Thus, transcatheter ablation using RF seems to be a new, safe non-pharmacologic therapeutic modality in the treatment of drug-refractory supraventricular tachycardia involving an AP. The induced changes of AP conduction by RF are maintained over a long follow-up period. The results of RF catheter ablation might be proved by the use of larger tip electrode size.

11:45

DRAMATIC REDUCTION IN MEDICAL CARE COSTS ASSOCIATED WITH RADIOFREQUENCY CATHETER ABLATION OF ACCESSORY PATHWAYS

Michael de Buitleir, Joao Sousa, Hugh Calkins, Steven F. Bolling, Rafel El-Atassi, William H. Kou, Jonathan Langberg, Fred Morady, University of Michigan, Ann Arbor, MI

We compared the total cost of definitive therapy in 10 pts (6 women, 4 men, mean age 39 yrs) undergoing radiofrequency ablation (RF) and 10 pts (6 men, 4 women, mean age 34 yrs) undergoing surgical ablation (SA) for the Wolff-Parkinson-White syndrome. The mean duration of symptoms was 24 ± 14 years in the RF group and 13 ± 11 yrs in the SA group. All of the RFs were performed in 1990 and the SAs in 1989 and the success rate was 100% in each group. In the RF group each pt had a single accessory pathway (AP) (7 overt; 6 left-sided, 1 right-sided, and 3 septal). In the SA group all but 1 pt had a single AP (9 overt; 9 left-sided, 2 septal). Cost analysis revealed that the total cost of therapy in the RF group was $12,464 ± 3,027 compared to $47,955 ± 8,514 in the SA group (p< 0.0001). The cost of RF consisted of a hospital charge of $6,239 ± 1,468 and physician fees of $6,225 ± 1,884. The cost of SA was made up of a hospital charge of $32,610 ± 6,440 and physician fees of $15,345 ± 2,868. The hospital charge in the SA group included the cost of baseline and follow-up electrophysiology studies, hospital admissions and follow-up office visits related to the patients' arrhythmia. The mean total duration of hospitalization was 3 ± 1 days in the RF group and 10 ± 3 days in the SA group (p< 0.001).
In conclusion, RF of accessory pathways results in a dramatic reduction in the cost of medical care for pts with the Wolff-Parkinson-White syndrome. This cost reduction is a major advantage of RF over surgical therapy.

Tuesday, March 5, 1991
10:30AM–12:00NOON, Room 260, West Concourse
Surgical Follow-Up of Congenital Heart Disease

10:30

MORBIDITY AND MORTALITY 18 TO 29 YEARS FOLLOWING TETRALOGY OF FALLOT REPAIR

Dieter Horstkotte, Franz Loogen, Hagen D. Schulte, Wolfgang Bircks, Heinrich-Heine-Universität, Düsseldorf, F.R.Germany

Repair of tetralogy of Fallot (TOF) is a procedure associated with a significant residual morbidity and mortality. We studied 246 consecutive patients (p), mean age 11.9+6.7 years, with complete repair of TOF between 1961 and 1972. Prior palliative procedures had been performed in 91 of these p. Prospective follow-up was complete and ranged 18.1 to 29.3 (mean 20.3+4.2) years. There were 60 operative (24%; 1961-1967: 32%, 1968-1978: 18%) and 21 late deaths. Cumulative survival was 0.76+0.03 after 1 year, 0.72+0.03 (10 years), 0.68+0.04 (20 years) and 0.63+0.05 (25 years). After 20 years of follow-up, cumulative complication rates were 0.17+0.03 for documented ventricular tachycardia/fibrillation, 0.16+0.03 for right heart failure, 0.13+0.03 for left heart failure and 0.11+0.03 for infective endocarditis. Eighteen of the 21 late deaths were from cardiac causes: sudden (n=9), infective endocarditis (n=4), left heart failure (n=3), and right heart failure (n=2). The hazard for ventricular arrhythmias was inconstant and increasing with time from the initial operation. After 20 years of follow-up the cumulative incidence of sudden death, documented ventricular trachycardia or fibrillation was 0.81+0.07. Younger age at surgery resulted in a significantly better long-term prognosis (p=0.03) with cumulative survival rates after 20 years beeing 0.90+0.06 (ages 1-9 years), 0.92+0.04 (10-14 years), 0.83+0.09 (15-19 years) and 0.69+0.11 (>20 years). 20 years after TOF repair 57.3% of the p were in NYHA Functional Class I, 35,2% in Class II.